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EXAMINER

CHANG, AUDREY Y

| ART UNIT | PAPER NUMBER |
|----------|--------------|
| 2872 | |

DATE MAILED: 10/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/826,244

Applicant(s)

PARK, TAE SOO

Examiner

Audrey Y. Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 5-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 5-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on **August 25, 2006** has been entered.
2. This Office Action is also in response to applicant's amendment filed on **August 25, 2006**. The applicant is respectfully reminded that the amendment to the specification is NOT in comply with the rules stated in 37 CFR 1.121, for there is no proper marking for the alternation of the specification. The amendment to the **specification** therefore has NOT been entered.
3. By this amendment, the applicant has amended claims 1, 5, 12, 17 and 18 and has canceled claims 2-4.
4. Claims 1, 5-19 remain pending in this application.

Drawings

5. The drawings were received on August 25, 2006. These drawings are accepted.

Response to Amendment

6. The amendment filed **August 25, 2006** is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows:

claims 1 and 12 have been amended to include the phrase "wherein the convertible regions that do not correspond to at least one parallax image become transparent and the convertible regions that

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correspond to the at least one parallax images become opaque” and “the length for a segment of the convertible region is $(n-1)(D-d)/D$ where n is the number of the parallax images, p is a pixel dimension, D is the distance from a viewer to the display panel and d is the distance from the mask to the display panel”. The specification simply fails to teach such. As indicated by all the figures in the specification, the mask is overlaying the display panel having the at least one parallax images displayed, there is no such convertible region that do NOT correspond to at least one parallax image. Also the segment length for the convertible regions has the size of $(n-1)(D-d)/D$ only if the convertible regions is **opaque**.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. **Claims 1 and 5-19 are rejected under 35 U.S.C. 112, first paragraph**, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The reasons for rejection based on the newly added matters are set forth in the paragraph above.

9. **Claims 1 and 5-19 are rejected under 35 U.S.C. 112, first paragraph**, as failing to comply with the **enablement** requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 1 and 12 have been amended to include the phrase “*wherein the convertible regions that do not correspond to at least one parallax image become transparent and the convertible regions that correspond to the at least one parallax images become opaque*” The specification simply fails to teach that there is any convertible region that do not correspond to the at least one parallax images. As shown in all the Figures in the specification, the mask with the convertible regions is covering the at least one parallax images therefore they are all correspond to the parallax images, except that the convertible regions are remaining opaque so that parallax images can be properly directed to the proper eyes of the observer.

Claims 1 and 12 recite “a segment of the convertible region is $(n-1)p(D-d)/D$ ” but have failed to identify whether this segment is opaque or transparent. This segment has to be opaque in order for the stereoscopic image to be viewed.

With regard to claims 13 and 15, it is not clear how exactly can the controller control the distance between the display panel and the mask, (with regard to claims 11 and 13). The specification and the claims **fail** to teach explicitly how exactly can the display panel and the mask be moved. There is no means disclosed to enable such move.

Claim Objections

10. **Claims 1 and 5-19 are objected to because of the following informalities:**

(1). The **amended** phrase “wherein the transparent and convertible regions of the mask **correspond** to the at least one parallax images” and the **amended** phrase “ wherein the convertible regions that do not correspond to at least one parallax image become transparent and the convertible regions that correspond to the at least one parallax images become opaque” recited in claims 1 and 12 are **contradicting** to each other. This makes the convertible regions really confusing as how do they function with the transparent regions **to enable the three-dimensional image display**. Also what does it mean

by “correspond to” the parallax images or “not correspond” to the parallax images. The mask fully covers the display panel having the parallax image displayed. The mask as a whole corresponds to the parallax images. The opaque regions of the mask correspond to the parallax images that block it from reaching the eyes and the transparent regions of the mask correspond to the parallax images by allowing the images to reach the proper eyes of the observer respectively.

(2). The phrase “ the length for a segment of the transparent region ... and length for a segment of the convertible region” recited in claims 1 and 12 is *confusing* it is not clear what is considered to be the “transparent region” and the “convertible region” since there are some convertible regions being *transparent* too. Also the length equations specified here could only be true for the **actual** “transparent segment” and **actual** “opaque segment” in order for the three-dimensional image display to be realized. It is not clear if this is the case or not.

(3). The amended phrase “n is the number of parallax images” recited in claims 1 and 12 is confusing since it is not clear what is considered to be the *number* of parallax images. The phrase has been examined in the interpretation as *number of views*. **Applicant fails to clarify this issue in the most current amendment.**

(4). The amended phrase recites “p is a *pixel dimension*” recited in claims 1 and 12 is confusing and indefinite since it is not clear what is considered to be the “pixel dimension” and what does it relate to? **Applicant fails to clarify this issue in the most current amendment.**

(5). It is not clear what is the *predetermined number* of the parallax images. The number therefore is **arbitrary**. The claims still fail to define what is considered to be the “predetermined number of parallax images”. There must be a physical condition for determining such “predetermined number of parallax images” however the claims fail to explicitly state such and makes it to be arbitrary. **Applicant fails to clarify this issue in the most current amendment.**

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(6). It is not clear how exactly can the controller control the distance between the display panel and the mask, (with regard to claims 11 and 13). The specification and the claims **fail** to teach explicitly how exactly can the display panel and the mask be moved. **Applicant fails to clarify this issue in the most current amendment.**

(7). The phrase “when the number of parallax image is *less than a predetermined number*” and the phrase “when the number of parallax images is *greater than the predetermined number*” recited in claims 14 and 15 are confusing and indefinite since it is not clear what is considered to be the *predetermined number*. **Applicant fails to clarify this issue in the most current amendment.**

(8). **Claim 12 has been amended** to include the phrase “wherein transparent regions of the mask are changed with a displacement in direction along a perpendicular direction”, that is confusing and indefinite since it is not clear the displacement of what and what is considered to be the “perpendicular direction”?

(9). Claim 17 is confusing and indefinite since it is not clear what does it mean by “detecting convertible regions that do not correspond to at least one parallax images”? All of the mask portions correspond to the parallax images since the mask covers the whole display panel.

(10). The amended phrase “the portion of the mask that does not correspond to at least one parallax image to become transparent regions” recited **in amended claim 18** is confusing and indefinite since there is none of the portions of the mask that do not correspond to the parallax images since the mask covers the display panel and therefore correspond to all of the parallax images.

(11) Claims 5 and 6 are confusing and indefinite since they depend from **a canceled claims**.

 **Appropriate correction is required.**

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. **Claims 1, 5-6, 8-10, 12, and 14-19 are rejected under 35 U.S.C. 102(b) as being anticipated by the patent issued to Taniguchi et al (PN. 6,094,216).**

Taniguchi et al teaches a *stereoscopic image display apparatus* that is comprised of an *image display* (1, Figure 1) serves as the *display panel* for displaying a plurality of *parallax images* (Rs and Ls) and a *barrier* comprises a *spatial light modulator* (2), which may comprise a *liquid crystal display panel* (please see column 11, lines 9-17 and Figure 35), having *transparent regions* and *opaque regions*, served as the *convertible regions*, alternatively arranged, wherein the *barrier* serves as the *mask* such that the transparent regions allows the right eye perspective image (Rs) and left eye perspective images (Ls) to reach the right eye (AR) and left eye (AL) of an observer respectively and the *opaque regions* prevents the right eye perspective images to reach left eye and prevents the left eye perspective images to reach right eye to enable the stereoscopic viewing condition, (please see Figures 1, 2A, 2B, 4A, 4B, 15A, 15B, 16B, 17, 18, 19A, 19B). The mask or the spatial light modulator (2) is placed *in front* of the image display panel. The transparent portions and the opaque portions *all correspond* to the parallax images displayed on the display panel. The opaque portions of the mask or barrier *block* the parallax images from reaching the eyes and the transparent portions allow the parallax images to reach the proper eyes of the observer (AR and AL as shown explicitly in Figure 1).

With regard to the *amended* phrase “wherein the length for a segment of transparent region is $p(D-d)/D$ and the length for a segment of the convertible region is $(n-1)p(D-d)/D$ where n is the number of

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the parallax images, p is a pixel dimension, D is the distance from a viewer to the *display panel*, and d is the distance from the mask to the display panel“, **Taniguchi et al teaches** in the arrangement of the three-dimensional display device with observer at a distance C from the display panel to the observer (which correspond to D of the claim), and the distance D between the display panel to the *mask* (which correspond to d of the claim) or the spatial light modulator (please see Figure 1), wherein the length for a segment of the transparent regions B' is related to the pixel dimension P as $B' = P(C-D)/C$, (or $P(D-d)/D$ in terms of the symbols in the claims) (please see column 12, lines 1-2). Taniguchi et al teaches that the number of the parallax images is 2 or $n=2$ in this case and the length segment for the convertible region or the opaque region **is of the same length** as of the transparent region (please see Figures 1 and 11A and 11B, column 12 lines 37-42) which means the length for the convertible or opaque region is also $P(C-D)/C$ or $(n-1)P(C-D)/C$ with $n=2$, (or $(n-1)P(D-d)/D$ in terms of the symbols in the claims).

With regard to claims 10 and 12, Taniguchi et al teaches that a *controller* (please see Figure 1) is provided to convert a portion of the convertible regions into transparent regions depends on the number of the parallax images, (please see the explicit teachings of different transparent/opaque regions patterns for different parallax images arrangements shown in Figures 2A, 2B, 4A and 4B).

Claim 12 has been amended to include the phrase “wherein transparent regions of the mask are changed with a displacement in direction along a perpendicular direction”. Taniguchi et al teaches explicitly that the size of the transparent regions is directly proportional to the distance of the barrier with respect to the display panel (distance D in Figure 1), which means implicitly that the transparent regions of the barrier changes with a displacement of the barrier in the direction perpendicular to the display panel.

With regard to claims 5-6, Taniguchi et al teaches that the transparent regions of the mask or spatial light modulator do not aligned in the perpendicular direction, (please see Figure 4B). A left side upper transparent region aligned with a right side lower transparent region and a right side upper

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transparent region aligned with a left side lower transparent region as shown in Figures 4B, 16B, 17, 19B, 20B).

With regard to claims 8, 9, 17 and 18, Taniguchi et al teaches the convertible regions of the spatial light modulator or mask are converted to transparent regions for the regions of display panel displays no parallax images, (please see Figure 18).

With regard to claims 14-16, Taniguchi et al teaches that the number of transparent regions and therefore the size of transparent regions is in accordance with the number of parallax images, (please see Figures 4A, 4B, 17). The opaque regions (in the vertical sense) are larger than the transparent regions as shown in Figure 4B.

With regard to claim 19, the controller aligns the transparent and opaque regions of the spatial light modulator or mask along horizontal direction, (please see Figure 4B).

This reference has therefore anticipated the claims.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 7, 11, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Taniguchi et al.

The stereoscopic image display apparatus taught by Taniguchi et al as described for claims 1 and 12 above has met all the limitations of the claims.

With regard to claim 7, **Taniguchi** et al teaches that for *full color display*, (Figure 30), the right eye parallax image and the left eye parallax image are each including red, blue and green pixels. The full

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color right eye parallax image pixel therefore is represented by three color pixels. This implicitly means that in order for the transparent region to properly direct each of the color pixel to the proper eye, the transparent regions has to have a size in accordance with the size of the color pixel, which therefore will be *one third* of the original pixel. Such modification therefore is obvious to one skilled in the art for the benefit of allowing the full color stereoscopic image be properly observed.

With regard to claims 11 and 13, Taniguchi et al teaches that the transparent regions and the opaque regions of the mask or the spatial light modulator is controlled by the controller which takes into the account of the distance between the display panel and the mask, (please see Figure 1, distance D). This reference however does not teach explicitly to “control” a distance between the display panel and the mask. The claims fails to teach what does it means by “control the distance” it therefore can only be examined in broadest interpretation. Since the distance information is used to determine the pattern of the mask, (i.e. the size and locations of the transparent and opaque regions), this controller is in a way controls the distance and it would have been obvious to one skilled in the art to make the display panel and the mask have a relative distance between them that is in accordance with the information used in the controller to determine the mask pattern for the benefit of allowing the best mode stereoscopic viewing condition be established.

Response to Arguments

15. Applicant's arguments filed on August 25, 2006 have been fully considered but they are not persuasive. The amendments to the claims have been fully considered and rejected for the reasons stated above.

Applicant's arguments are mainly based on the amendments to the claims and they have been fully addressed for the reasons stated above.

In response to applicant's arguments which state that the cited Taniguchi et al only teaches the calculation of the width of each *slit* but does not teach “the calculation of the length of the convertible

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portion responsive to the number of the parallax images” the examiner respectfully disagrees for the reasons stated below. Firstly, the claims and the specification ALSO do not “teach the calculation of the length of the convertible portion responsive to the number of the parallax images” (what is this?), rather the specification and the claims teach to calculate the segment size of the convertible regions (that should be opaque). Taniguchi et al teaches that for $n=2$, the segment length for the transparent regions (or slits) of the barrier and the segment length for the opaque regions (or light shielding portions) **are of the same size B'**, (please see column 12, lines 37-43). This means the cited Taniguchi et al reference teaches the calculation of the segment sizes for both the transparent regions as well as the convertible opaque regions. This reference therefore reads on the claims of the instant application.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 571-272-2309. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

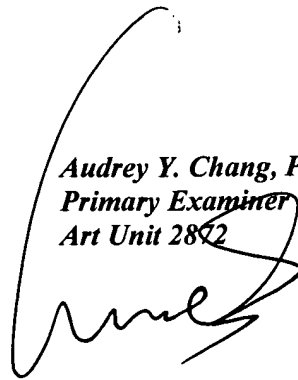
Application/Control Number: 10/826,244

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Audrey Y. Chang, Ph.D.
Primary Examiner
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A. Chang, Ph.D.

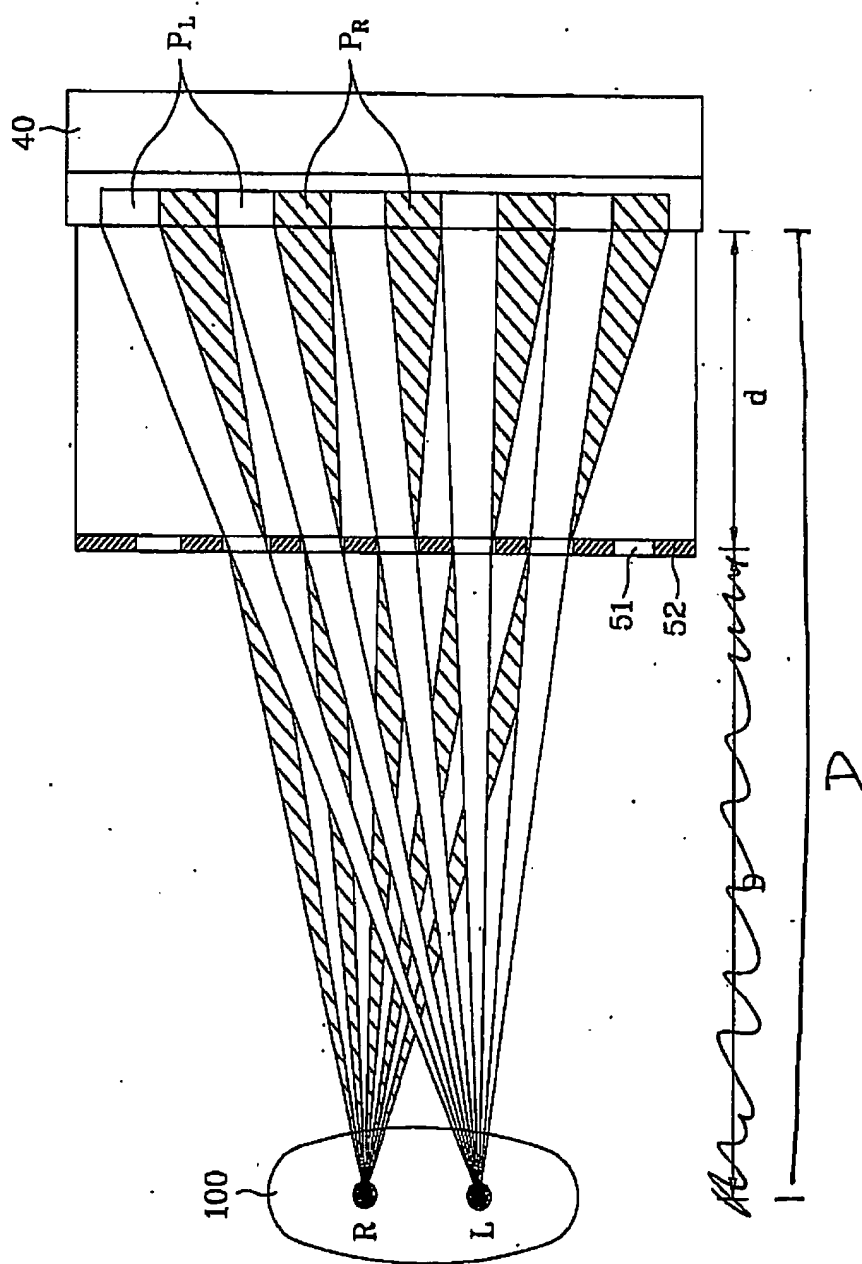
A large, stylized handwritten signature in black ink, which appears to be 'Audrey Y. Chang', is written over the typed name and title.

Entry Approved

11/20/06

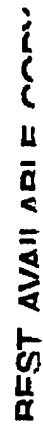
Inventor: Tae Soo Park
Serial No.: 10/826,244
Filed: April 16, 2004
Attorney Docket No: 2080-3249
For: THREE-DIMENSIONAL IMAGE DISPLAY DEVICE
Replacement Sheet (1/3)

FIG. 1



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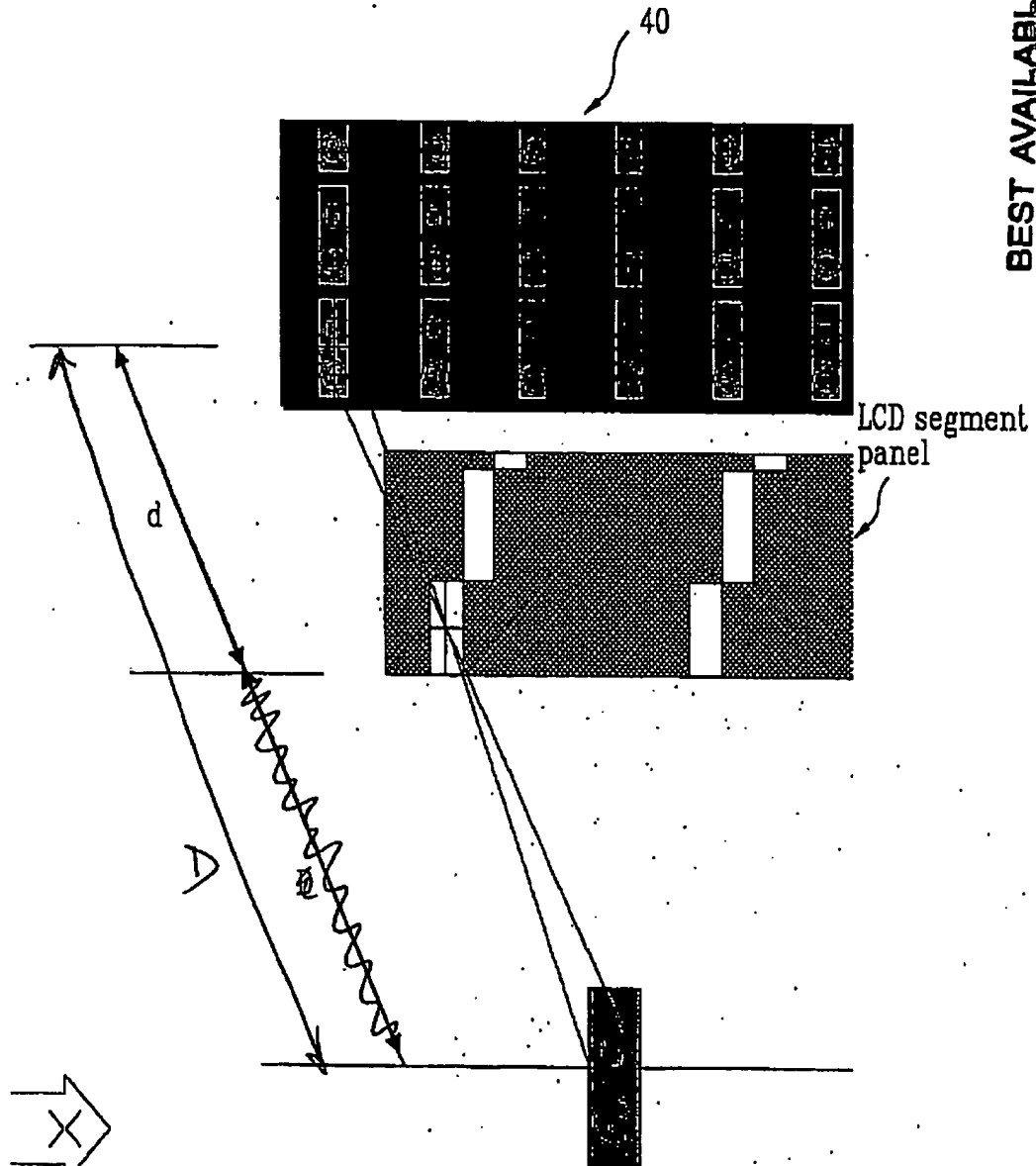


Viewer

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SC
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FIG. 5



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